



Is This the Perfect Protein?

Insects provide the highest-quality protein on the planet—but will you dig in? You will if you know what's good for you. **BY CLINT CARTER**



JACK CEADEL, THE COFOUNDER OF HOPPER FOODS, WALKS into a Gold's Gym in Austin, Texas, carrying a plastic bucket of prototype protein bars. The afternoon crowd here is his perfect tasting panel—fearless guys who would happily drink snake venom if you told them it could boost their biceps circumference. Ceadel hands a bar to a burly personal trainer named Eric, who wolfs down half of it and nods with satisfaction. Then somebody drops the bomb: That was no ordinary protein bar. In fact, these are insect bars. They're made with real crickets—about 26 of the little buggers apiece.



2/ Sweet Potato Pancakes

Mix 1 or 2 Tbsp mashed yams into a batch of batter. Top with cranberry sauce, slivered almonds, and orange zest.

Eric's face scrunches up. "It's a good thing I didn't know," he says. "I wouldn't have eaten it." But would he eat it again? "Well... yeah. Sure. It's not like you can taste the crickets." Not that he would know. Like most guys, he's never willingly eaten an insect in his life.

Here's why he should start: "Nutritionally, insects are quite excellent," says Arnold van Huis, Ph.D., an entomology researcher at Wageningen University in the Netherlands. "In a number of instances, they're even better than normal meat." Ounce for ounce, crickets provide more than twice the protein of beef. Plus, that protein is the best kind, containing all nine essential amino acids. Crickets also pack nearly five times as much magnesium as beef. A Harvard study review from last year suggests

OUNCE FOR OUNCE, CRICKETS PROVIDE MORE THAN TWICE THE PROTEIN THAT BEEF DOES.

that increasing your magnesium intake may cut your risk of heart disease by as much as 22 percent; plus, according to researchers in Japan, you could lower your risk of type 2 diabetes by about a third. Then there's iron: Crickets have more than three times as much of this muscle-aiding mineral as beef does.

One reason for the difference: Unlike big animals, insects are ingested whole. "You're not just eating muscle," says Daniella Martin, the author of *Edible*. "You're eating bones and organs, which

deliver calcium, iron, vitamin B₁₂, and zinc. It's like if somebody ground up a whole cow."

By the time Ceadel leaves Gold's, he's won over a handful of adventurous eaters. As he heads toward the door, the young woman at the front desk shouts to him, "Goodbye, cricket man!" But here's the thing: Ceadel is just one guy representing an industry that's starting to swarm.

MICHAEL O'LEARY CALLS HIS 3,000-FOOT WAREHOUSE outside Minneapolis "the ranch." His bugs live their brief lives inside blue cages stuffing themselves on spent beer grains from a nearby brewery. "They're scavengers, so they'll eat just about anything," says O'Leary. Brewery waste is just convenient. And, well, it's green.

That's a huge selling point for cricket farming: It's environmentally responsible. Compared with "microlivestock" (a more palatable-sounding term for edible insects), some farms that raise chickens, pigs, and cows—especially cows—look like nuclear waste dumps. Crickets create a fraction of the greenhouse gases; plus, they can grow in small spaces and use scarcely any water. A single pound of beef, by comparison, requires thousands of gallons of water—2,600 to 5,200, according to estimates from the U.N.'s Food and Agriculture Organization. Cattle take two to three years to reach slaughter weight; crickets grow from egg to adult in seven weeks. "People are starting to realize that contemporary agriculture is unsustainable," says O'Leary.

"This is where the industry is heading," says Harman Johar, founder of World Ento, a company that grinds crickets. He estimates that 25 small companies are selling or preparing to sell ground-cricket foods right now in the United States. But we're playing catch-up: Eighty percent of the world already eats bugs, a practice known as entomophagy. "It's much easier to get Americans to eat insect bars than to eat insects," Johar says. Van Huis, who authored the FAO report, agrees. "People think the taste is most important. It's not—it's the emotional barrier."

To illustrate, Johar tosses a handful of roasted crickets into a spice grinder and gives it a few pulses. Then he pours a light, fluffy powder onto a paper towel. What I see looks like cumin, but it could just as easily be enriched wheat flour or whey protein. I see no legs, no antennae, no bug eyes staring back at me. It's just a nondescript ingredient, ready for muscle building.

For many in the bug business, cricket powder isn't the end game. It's just the first step toward a near future in which whole crickets, waxworms, beetles, and stinkbugs are common cooking ingredients. "Crickets are the gateway bug," says Megan Miller, founder of Bitty Foods, a Bay Area cricket flour company. "They're like the peanut of bugs—useful, but not that exciting culinarily."

To me, that sounded like a challenge.

CRICKETS: PROTEIN KINGS

CRICKET "FLOUR" IS SHOWING UP IN COOKIES, CHIPS, AND SNACK BARS. HERE'S WHY YOU SHOULD HOP ON THE TREND NOW.

	 POWDERED CRICKETS	 COOKED BEEF SIRLOIN	 SCRAMBLED EGGS	 WHOLE MILK
PER 100 G				
CALORIES	455	243	149	61
PROTEIN G	64	30	10	3.15
FIBER G	19	0	0	0
CALCIUM MG	132	20	66	113
ZINC MG	22	4.9	1.0	0.37
IRON MG	6	1.7	1.3	0.03
MAGNESIUM MG	109	22	11	10

Sources: USDA National Nutrient Database, *Molecular Nutrition & Food Research*



JIMINY CRICKETS!
Pulverized, the chirpers have a flourlike flavor.

THERE'S A CRICKET LEG LODGED BENEATH MY tongue. The appendage is sharp, sort of like a splintered toothpick, and I'm trying to dig it free without my girlfriend seeing. She's not enthused about having insects at our dinner table, even though I'm jazzing up the roasted critters with olive oil and garlic. "They'll be just like croutons," I argue. But croutons don't have eyeballs, so she leaves the kitchen while I spread the whole crickets out on the roasting pan.

The cricket croutons in my salad taste mild, like buckwheat or rye. Still, it's hard to shake the feeling that they're going to hurt me somehow. "Entomophagy brings out a lot of anxiety," says David Gracer, a farmer of exotic bugs. (He supplied the giant crickets for *Rise of the Planet of the Apes*.) "I'm constantly hammering away at

critical-thinking skills. That's what it takes to overcome the fear."

Because once you overcome the ick factor, bugs can be quite delicious. In one of Van Huis's experiments, he prepared two batches of meatballs, one entirely from beef and the other with a 50-50 mix of beef and ground mealworms. People didn't know which meatball was which, and when asked which they preferred, nine out of 10 chose the wormball. "I find that when people try insects once, the second time is not a problem," Van Huis says, and then adds: "But you have to convince them that first time."

A Belgian study published earlier this year backs his claim. It surveyed 189 people after they'd tasted crickets and mealworms; 92 percent of those in the 26-to-45 age range said



GEAR YOU WANT

CUTTING-EDGE SHUN SHIMA STEAK KNIFE SET

You've cooked that rib eye to luscious perfection. Why mangle the meat by slicing into it with a subpar knife? The steak's muscle fibers help keep it moist, but sawing through them with a dull blade squeezes out the flavorful juices. The result: dry, chewy steak. Use these 5-inch blades to surgically sever the fibers and retain maximum tenderness and juiciness. At \$50 per, they're a bit pricey, sure, but think of the culinary cost of a lifetime of sucky steaks. \$200, williams-sonoma.com



BONUS TIP SLICE SMARTER

How you cut steak is as important as what you cut it with, says butcher Pat LaFrieda, author of the cookbook *Meat: Everything You Need to Know*. The key? Cutting meat against the muscle fibers, or "grain," shortens those fibers, yielding tender bites.

For bone-in rib eye, it's easy: The fibers run parallel to the bone. So slice the meat perpendicular to the length of the bone.

For flank steak, find the grain on the meat's surface. Keep the knife blade angled at 45 degrees to slice the shortest fibers.

T-bone on the board? Cut the meat from the bone. Then make slices across the steak, keeping the blade angled as above.

IN A BLIND TASTE TEST, NINE OUT OF 10 PEOPLE PREFERRED WORMBALLS OVER ALL-BEEF MEATBALLS.

they'd eat insects again. Two-thirds said they'd even consider cooking bugs in their own kitchen.

Think about food phobias you may have once had. Maybe it was lobster that turned you off. Or oysters or sushi. Odds are, your palate came around and you now enjoy those foods. Once restaurants and the food industry begin to normalize the insect-eating experience, you may soon overcome your creepy-crawly reluctance as well. In New York City, at least half a dozen

establishments already feature bugs on their menus. Even the world's top-rated restaurant, Noma, in Copenhagen, serves them.

Globally, people consume about 1,900 different species of insects. "And the cricket, in terms of what's available to us right now, is one of the sexier ones," says Ceadel. "But the ultimate goal is to normalize eating insects." Who knows—maybe we'll see mealworm and stinkbug bars next. (Both bugs are quite tasty, I've been told.)

My girlfriend didn't see the sexiness, at least not while I was hoisting forkfuls of cricket salad into my mouth. Still, I finished my plate, kept the leftovers, and ate them again the next night. Were the crickets as good as a burger? Not by a long shot. (And for the sake of my sex life, they probably won't become a staple in my kitchen.) But will I keep eating cricket bars? Well, sure. Why not?

I may even try a wormball one of these days. ■



HOLY SHIT! KITCHEN TRICK

ICE OUT SALAD

Vegetables tend to lose their crunch in the dry environment of a supermarket. Restore the crispness of produce like celery, carrots, and salad greens by submerging it in a bowl of ice water for 15 minutes. —Frank Proinzano, chef of Sauce, NYC

START YOUR BUG HABIT

YOU MAY NOT FIND JUGS OF CRICKET PROTEIN IN YOUR GROCERY (YET). SO SOURCE THESE EDIBLE INSECTS ONLINE.



1/ WORLD ENTO RECIPE READY ADULT CRICKETS

These whole crunchy crickets arrive lightly toasted, but you'll want to season and cook the little buggers to amp up their flavor. They're raised on non-GMO grain for now, but World Ento has plans to switch the crickets to an all-grass diet.

\$9, 100 GRAMS; WORLDENTO.COM

2/ BITTY ALL-PURPOSE BAKING FLOUR

This wheat flour substitute is made with cassava flour, coconut flour, and powdered crickets. You can use it in muffins, pancakes, or pizza crust. This flour has about six times the protein and seven times the fiber of typical all-purpose flour.

\$20, 20 OZ; BITTYFOODS.COM

3/ HOTLIX CRICK-ETTES SALT N' VINEGAR

If you don't like the salt-and-vinegar flavor (we did), no worries. This brand offers two others—sour cream and onion, and bacon and cheese. And if you don't like the idea of snacking on cricket chips, well, grow a pair! Try them as a substitute for beer nuts.

\$2, A FEW CRICKETS; HOTLIX.COM

4/ EXO PROTEIN BAR

Exo packs in more protein than any other bug-based bar we found (10 grams per bar). The ingredient list is straightforward, and the company's two delicious flavors—cacao nut and PB&J—were developed with the help of a Michelin-starred chef.

\$36, DOZEN; EXO.CO